

REMARKS

By the present amendment, claims 1-11 have been amended to clarify their presentation. Support for the amendments is found throughout the original specification. Further, new claims 12-16 have been added. Support for the new claims is found in the original specification, in particular on page 8, lines 28-30 (claim 12), page 9, lines 6-7 (claim 13), page 6, lines 17-19 (claims 14-15), and page 6, lines 26-27 (claim 16).

Claims 1-16 are pending in the present application. The claims are directed to a method of sequence determination for nucleic acid. Claim 1 is the only independent claim.

As a preliminary, Applicants and Applicants' representative thank the Examiner and his Supervisor for the personal interview which was held on December 10, 2003.

In the Office Action, it is indicated that the claim for priority is not acknowledged in the absence of an English translation of the priority application.

Reconsideration and withdrawal of this determination is respectfully requested. Rule 1.55(4) states that "[a]n English language translation of a non-English language foreign application is not required except when the application is involved in an interference (§ 1.630), when necessary to overcome the date of a reference relied upon by the examiner, or when specifically required by the examiner." Accordingly, it is submitted that the claim for priority should be granted. In the event an English translation is specifically required by the Examiner, Applicants respectfully request the reason for this requirement.

Next, in the Office Action, claims 1-6, 8-9 and 11 are objected to for their presentation because of the use of numerals in a circle.

The presentation of these claims has been modified to use numbers in parenthesis.

Accordingly, it is submitted that the objection should be withdrawn.

Next, in the Office Action, claims 5-7 and 11 are rejected under 35 U.S.C. 112, second paragraph, as indefinite. It is alleged in the Office Action that the phrase “upper four groups” in claim 5 and “central values” in claims 6 and 7, are vague and unclear, and that the term “conditions” in claim 11 lacks antecedent basis.

Reconsideration and withdrawal of the rejection is respectfully requested. The term “upper four groups having large peak numbers” in claim 5 has been replaced by “four groups having the largest peak numbers”, the term “central values” in claims 6 and 7 has been replaced by “median values” in claims 6 and 7, and the term “conditions” in claim 11 has been replaced by “predetermined conditions, while new claims 12-13 specify certain type of conditions that may be predetermined, as explained and illustrated on pages 8-9.

In view of the above, it is submitted that the rejection should be withdrawn.

Next, in the Office Action, claims 1-11 are rejected under 35 U.S.C. 103(a) as obvious over US 4,833,332 to Robertson et al. (Robertson) in view of US 5,834,972 to Shiemenz, Jr. et al. (Shiemenz) and US 5,098,536 to Anderson (Anderson). It is alleged in the Office Action that Robertson discloses the presently claimed method except the matrix transformation step and the peak elimination step, and that Shiemenz discloses a matrix transformation step to amplify digitalized input and Anderson discloses a peak determination step to improve signal-to-noise ratio.

The rejection is respectfully traversed. Robertson is not concerned about the correction of a discrepancy between the strength of the signal detected and the strength of the signal emitted by the bases (fluorochromes). Specifically, Robertson determines the identity of the bases, from

signals detected by two detectors, by using a predetermined algorithm (see Robertson at col. 15, lines 48-61). Thus, Robertson does not provide any teaching or suggestion regarding calculating a matrix value for obtaining emission strength from detected signal strength.

Specifically, even if, arguendo, a matrix transformation was present in the algorithm of Robertson (which would be a 2×4 matrix since there are only two detectors), it would necessarily be included in the function W defined at col. 14, lines 35-38 which is used to identify the bases on the basis of the detected waveform obtained from the two detectors. Since Robertson does not teach or suggest calculating or modifying the function W based on the signal waveform detected during actual sample migration, the same would also be true of any transformation matrix, if present.

In other words, any transformation matrix, if used in Robertson, would need to be pre-calibrated (calculated) based on an exclusive reagent kit of the prior art, as disclosed in the introduction to the present specification. Since, in the pre-calibration method of the prior art, the fluorochromes of the exclusive reagent kit are detected independently, the matrix coefficients are calculated directly from the detected signal. In particular, such pre-calibration method does not comprise a classification step (3) and an allocation step (5) as in present claim 1.

Further, Schiemenz cannot remedy the deficiencies of Robertson, because Schiemenz concerns a matrix for signal amplification, not signal correction. Thus, in Schiemenz, the output signals are amplified but their relative values are not modified. Accordingly, Schiemenz does not provide any incentive to modify a detected signal using matrix transformation to obtain an emitted signal, as recited in the present claims. Therefore, the present claims are not obvious over any combination of Robertson and Schiemenz.

In view of the above, it is submitted that the rejection should be withdrawn.

In conclusion, the invention as presently claimed is patentable. It is believed that the claims are in allowable condition and a notice to that effect is earnestly requested.

In the event there is, in the Examiner's opinion, any outstanding issue and such issue may be resolved by means of a telephone interview, the Examiner is respectfully requested to contact the undersigned attorney at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants hereby petition for an appropriate extension of the response period. Please charge the fee for such extension and any other fees which may be required to our Deposit Account No. 50-2866.

Respectfully submitted,

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